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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,293

07/13/2006

Fumio Saito

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3076

24040

7590

05/01/2009

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EXAMINER

EASON, MATTHEW A

ART UNIT

PAPER NUMBER

2614

MAIL DATE

DELIVERY MODE

05/01/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/586,293	Applicant(s) SAITO ET AL.	
	Examiner Matthew Eason	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/10/2006, 7/9/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-6 are presented for examination.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3 rejected under 35 U.S.C. 102(b) as being anticipated by Crane (US 1757451).

4. Regarding claim 1, Crane teaches the following:

A diaphragm for a loudspeaker (diaphragm a, Figs. 1-6), characterized in that a plurality of slits are formed in a diaphragm body extending from its center portion toward an outer circumference (plurality of holes are present in a curved manner from the center; Fig. 2) and a filling material made of a material different from the diaphragm body is filled in these slits (Col. 5, lines 51-57).

While Crane mentions 'holes' and not slits as claimed, mention is made that they may be "of any shape and cut or otherwise formed in any desired manner" (Col. 5, lines 10-18). Therefore, the holes anticipate the slits as claimed.

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5. Regarding claim 2, Crane teaches the limitations of claim 1 as shown. Crane further teaches: *the slits extend linearly or in a curved state* (plurality of holes are present in a curved manner from the center; Fig. 2).
6. Regarding claim 3, Crane teaches the limitations of claim 1 as shown. Crane further teaches: *the filling material has a smaller Young's modulus and/or larger internal loss than a main material of the diaphragm body* (Rubber may be used, which has a Young's modulus lower than typical diaphragm materials; Col. 5, lines 51-57).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
 1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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9. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crane (US 1757451), in view of Nakamura et al. (US 4410768).
10. Regarding claim 4, Crane teaches the limitations of claim 1 as shown. While Crane does not teach using a thermoplastic resin, in a related field, Nakamura teaches that diaphragm bodies are typically made of thermoplastic resins (Col. 4, lines 13-30). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Crane, which employs holes or gaps in a curved manner with a filling material (which is not limited by Crane), by using a typical diaphragm material, such as thermoplastic resin, because it is readily available in diaphragm manufacture and its properties relating to sound propagation are well known.
11. Regarding claim 5, Crane teaches the limitations of claim 1 as shown. While Crane does not teach using a foaming material, in a related field, Nakamura teaches that diaphragm bodies are typically made of epoxy resins with a foaming agent (Col. 4, lines 13-30). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Crane, which employs holes or gaps in a curved manner with a filling material (which is not limited by Crane), by using a typical diaphragm material, such as epoxy resin with a foaming agent, because it is readily available in diaphragm manufacture and its properties relating to sound propagation are well known.
12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crane (US 1757451).

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13. Regarding claim 6, Crane teaches the limitations of claim 1 as shown. Crane further teaches that its diaphragm is suitable for any application where a diaphragm is used for conversion, recording, propagation, or amplification of sound, or the conversion of other vibrations or impulses into sound waves, and to equivalent vibratory forces (Col. 6, lines 87-97). This would obviously include electromagnetic transducers, which are well known in the art to include a voice coil attached to a bobbin at the back side of a diaphragm attached to a frame with a magnetic circuit as described.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew Eason whose telephone number is (571)270-7230. The examiner can normally be reached on 8AM-5PM Monday-Friday.
15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on (571)272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew Eason/
Examiner, Art Unit 2614

/Brian Ensey/
Primary Examiner, Art Unit 2614
April 30, 2009